CLAIMS

1. A process of preparing a fluoride optical crystal comprising:

- loading a crucible with a mixture of a fluoride optical crystal starting material which contains at least one oxide as impurity, and an effective and non-excess amount of at least one fluorinating agent which is solid at ambient temperature,
- melting said mixture within said crucible,
- growing the crystal, by controlled cooling of the molten mixture,
- controlled cooling of said crystal to ambient temperature, and
- recovering said crystal ;

said process being characterised in that the oxide(s) resulting from the reaction between said fluorinating agent(s) and said oxide(s), the impurity or impurities, can be discharged from said crucible, in view of the dimensions of said crucible and of the intrinsic permeability of the material constituting it.

2. The process according to claim 1, characterised in that said effective and non-excess amount of fluorinating agent(s) represents 5% by weight at most, advantageously between 0.1 and 2 % by weight, of the weight of said starting material.

3. The process according to one of claims 1 or 2, characterised in that said fluorinating agent(s) is (are) selected from PbF_2, ZnF_2, NH_4F, $NH_4F.HF$, PTFE , and mixtures thereof.

4. The process according to any one of claims 1 to 3, characterised in that said crucible is a graphite crucible the permeability of which, measured according to the DIN 51935 Standard, is greater than 4 cm^2/s.

5. The process according to any one of claims 1 to 4, characterised in that said crucible is a graphite crucible the permeability of which, measured according to the DIN 51935 Standard, is greater than 10 cm^2/s.

6. The process according to any one of claims 1 to 5, characterised in that said crucible is suitable for preparing a fluoride optical crystal with a diameter ≥ 200mm and a height ≥ 50 mm.

7. The process according to any one of claims 1 to 6, characterised in that it is carried out for preparing monocrystals of alkali metal fluorides .

8. The process according to any one of claims 1 to 6, characterised in that it is carried out for preparing monocrystals of alkaline-earth metal fluorides.

9. The process according to any one of claims 1 to 6, characterised in that it is carried out for preparing monocrystals of CaF_2.

10. The process according to any one of claims 1 to 9, characterised in that controlled cooling of the molten mixture, for growing the (mono)crystals, is obtained by very slowly moving a stack of loaded crucibles from the top to the bottom, from a hot zone to a cold zone, of an oven having a vertical axis.

11. A method of making a calcium fluoride crystal with increased far-ultraviolet transmission, said method comprising :

providing a calcium fluoride crystal producing graphite crucible for containing calcium fluoride, said graphite crucible comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 4 cm^2/s

forming a molten calcium fluoride melt in said graphite crucible comprised of said graphite having a permeability greater than 4 cm^2/s

forming a calcium fluoride crystal from said molten calcium fluoride melt, said formed calcium fluoride crystal having an increased far-ultraviolet transmission with intrinsic transmission at 193 nm ≥ 99.9% and intrinsic transmission at 157 nm ≥ 99% .

12. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 5 cm^2/s.

13. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 6 cm^2/s.

14. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 7 cm^2/s.

15. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 8 cm^2/s.

16. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 9 cm^2/s.

17. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 10 cm^2/s.

18. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 11 cm^2/s.

19. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 12 cm^2/s.

20. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 13 cm^2/s.

21. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 14 cm^2/s.

22. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a Hg porosity of at least 16.7%.

23. A method as claimed in claim 11 wherein said graphite crucible is comprised of a graphite having a Hg porosity of at least 20%.

24. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission, said graphite crucible comprised of a graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 4 cm^2/s.

25. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a Hg porosity of at least 16.7%.

26. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a Hg porosity of at least 20%.

27. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 5 cm^2/s.

28. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 6 cm^2/s.

29. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 7 cm^2/s.

30. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 8 cm^2/s.

31. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 9 cm^2/s.

32. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 10 cm^2/s.

33. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 11 cm^2/s.

34. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24,

said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 12 cm^2/s.

35. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 13 cm^2/s.

36. A calcium fluoride crystal producing graphite crucible for making a calcium fluoride crystal with increased far-ultraviolet transmission as claimed in claim 24, said graphite having a permeability of which, measured according to the DIN 51935 Standard, is greater than 14 cm^2/s.